

REMARKS/ARGUMENTS

Claims 1-53 are pending in this patent application. Claims 32-44 are withdrawn. Claims 1-31 and 45-53 currently stand rejected. In this response, the Applicants have amended Claim 8 for clarification. No new claims have been added. No new matter has been introduced by this response.

PRIORITY

On page 2 of the current Office Action, the Examiner noted that Applicants' petition to amend the priority claim was still being reviewed. Accordingly, the Examiner stated that if the petition is accepted, the prior art rejections set forth in the current Office Action apply; if the petition is denied, the prior art rejections set forth in the Office Action mailed August 3, 2006 apply.

On May 2, 2007, the Office of Petitions GRANTED Applicants' petition to amend the priority claim. Accordingly, the prior art rejections set forth in the Office Action mailed August 3, 2006 are moot. The following claim amendments and remarks are directed to the rejections set forth in the Office Action mailed May 4, 2007.

CLAIM REJECTION UNDER 35 USC § 112

In the present Office Action, Claim 8 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants hereby amend Claim 8 to recite “. . . comprising a heater, an electrode, and a micropump . . .” The amendment is supported at least by Fig. 3 of the current application and the corresponding descriptions in the specification. No new matter is introduced by the amendment.

CLAIM REJECTIONS UNDER 35 USC § 103

Claims 1-14, 23/(10) [sic] and 45-52 stand rejected as being obvious over Pourahmadi (US 20020055167) or Anderson (US 20010036672) in view of Levine (US 6,031,286). Claims 15-22,

23/(17,22) [sic] and 24 are rejected as being obvious over Pourahmadi in view of Levine and further in view of Freeman (US 6,653,124). Claims 25-31 stand rejected as being obvious over Pourahmadi in view of Levine and Freeman and further in view of Kaplan (US 6,453,928) and/or Webster (US 6,521,188). Claim 53 is rejected as being obvious over Pourahmadi in view of Levine and further in view of McDevitt (US 20030064422).

Applicants have reviewed the cited references, and believe that the *prima facie* case of obviousness fails for two reasons. First, a person of ordinary skill in the art will **not be motivated to combine** the teaching of Levine (US 6,031,286) with Pourahmadi or Anderson, and second, if he or she does make the combination, there is **no reasonable likelihood of success**.

No Motivation to Combine Because Levine Channels Require Specific Aspect Ratio and Filler Deposition Characteristics Not Found in Pourahmadi or Anderson

Specifically, Levine teaches a technique of filling a pre-formed trench on the surface of a substrate with a filler material. Because the trench is of a specific “aspect ratio” and the filler material is of certain specific “deposition characteristics”, the filler material that lines the upper portions of the sidewalls of the trench meets at a “pinch off point referenced by numeral 30” in Figure 2. of Levine, so that a micro pipe is formed inside the trench. (Col. 3, Ins. 1-55, of Levine.)

However, the technique described in Levine is not flexible. It highly depends on the “aspect ratio” of the trench and the “deposition characteristics” of the filler material. Specifically, Levine requires the trench to have a large aspect ratio, which is defined as the ratio of the height (H) of the trench over its width (W). (Col. 3, Ins. 40-45.) If a trench does not have such a well-shaped structure, it is highly unlikely that the technique can still form a buried channel in the trench.

More importantly, Levine only teaches how to form channels of simple shapes (i.e. rectilinear channels in the detailed embodiments of Levine), not complex channels with corners, intersections, ramifications, etc. Based on the teaching of Levine, a person skilled in the art can readily perceive that the “filling” technology described in Levine will probably not function precisely and predictably when a trench turns, corners, or intersects with another trench. Partial or complete channel occlusion will probably occur. Unpredictable diversions or open-air channels

may also occur. All of these are **not** compatible with the manufacturing of microfluidic circuits as described in Pourahmadi (US 20020055167) or Anderson (US 20010036672). Therefore, one having ordinary skills in the art will **not** regard Levine as a way to modify either Pourahmadi or Anderson. Therefore, there is **no motivation to combine** the references.

No Reasonable Likelihood of Success Because Application of Levine Channels to Complex Channel Shapes of Pourahmadi or Anderson will Probably Fail

Further, even if one did combine the references, the buried channels of Levine are not expected to be successful when combined with the complex structures of Pourahmadi or Anderson. The stringent requirements of channel shape in Levine mean that partial or complete channel occlusion, unpredictable diversions or open-air channels will probably occur when attempting to apply to the complex shapes of the Pourahmadi or Anderson. Therefore, there is **no reasonable likelihood of success** when combining Levine with Pourahmadi or Anderson. Therefore, Applicants respectfully request withdrawal of the obviousness rejections.

DOUBLE PATENTING

Claims 1, 3, 4, 6, and 7 remain provisionally rejected for obviousness-type double patenting over co-pending application 09/874382 (6/4/01). Similarly, claims 1, 3-7 and 10-13 remain rejected over 11/0172,272 (11/20/04), claims 1, 6, 7 are rejected over 11/009171 (10/10/04), and claims 1-3, 5-7, 10-14 and 45-49 are rejected over 11/092415 (03/29/05). Each of these applications was filed after the first US filing date of the current application (09/545,260, filed 4/7/00). Therefore, Applicants respectfully submit that any rejection based on provisional obviousness-type double patenting should be directed to the later filed application(s), instead of to the current application. Accordingly, Applicants respectfully request withdrawal of the double patenting rejection. However, if deemed absolutely necessary, Applicant may file a terminal disclaimer on notification of allowable subject matter.

CONCLUSION

Applicants have addressed all of the Examiner's rejections. Applicants believe that the claims are now in condition for allowance and respectfully request that the Examiner grant such an action. If any questions or issues remain in the resolution of which the Examiner feels will be advanced by a conference with the Applicants' attorney, the Examiner is invited to contact the attorney at the number noted below. The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Deposit Account No. 50-3420 reference 31175803-004001 (Valoir).

Dated: August 6, 2007

Respectfully submitted,

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